

Topics in Current Genetics

R. Bock
(Ed.)

19

Cell and Molecular Biology of Plastids

 Springer

Cell And Molecular Biology Of Plastids Topics In Current Genetics

**Vaidurya Pratap Sahi, František
Baluška**



Cell And Molecular Biology Of Plastids Topics In Current Genetics:

Cell and Molecular Biology of Plastids Ralph Bock, 2007-09-19 The present book provides a comprehensive overview of our current knowledge on plastid biogenesis plastid nuclear communication and the regulation of plastid gene expression at all levels It also assesses the state of the art in key technologies such as proteomics and chloroplast transformation Written by recognized experts in the field the book further covers crucial post translational processes in plastid biogenesis and function including protein processing

Plastid Biology Kevin Pyke, 2009-04-30 Plastids reside in all plant cells and take on different forms in relation to their cellular function biochemistry and storage capacity The modern era of molecular biology and molecular genetics has enabled much to be learnt about how plastids function and how they relate to their evolutionary past In this accessible text Kevin Pyke expertly describes how the plastids are highly complex organelles at the very core of plant cellular function providing final year undergraduate and graduate students with an overview of plastid biology and recent developments in the field Topics covered include a consideration of different plastid types and how they relate to cell function plastid genomes and how proteins are imported into plastids photosynthesis and core aspects of plastid biochemistry plastid signalling and functionality within a cellular context and plastid genetic manipulation Supplementary colour images are available online at www.cambridge.org/9780521885010

Genomics of Chloroplasts and Mitochondria Ralph Bock, Volker Knoop, 2012-06-05 The past decade has witnessed an explosion of our knowledge on the structure coding capacity and evolution of the genomes of the two DNA containing cell organelles in plants chloroplasts plastids and mitochondria Comparative genomics analyses have provided new insights into the origin of organelles by endosymbioses and uncovered an enormous evolutionary dynamics of organellar genomes In addition they have greatly helped to clarify phylogenetic relationships especially in algae and early land plants with limited morphological and anatomical diversity This book written by leading experts summarizes our current knowledge about plastid and mitochondrial genomes in all major groups of algae and land plants It also includes chapters on endosymbioses plastid and mitochondrial mutants gene expression profiling and methods for organelle transformation The book is designed for students and researchers in plant molecular biology taxonomy biotechnology and evolutionary biology

Concepts in Cell Biology - History and Evolution Vaidurya Pratap Sahi, František Baluška, 2018-03-01 This book discusses central concepts and theories in cell biology from the ancient past to the 21st century based on the premise that understanding the works of scientists like Hooke Hofmeister Caspary Strasburger Sachs Schleiden Schwann Mendel Nemec McClintock etc in the context of the latest advances in plant cell biology will help provide valuable new insights Plants have been an object of study since the roots of the Greek Chinese and Indian cultures Since the term cell was first coined by Robert Hooke 350 years ago in *Micrographia* the study of plant cell biology has moved ahead at a tremendous pace The field of cell biology owes its genesis to physics which through microscopy has been a vital source for piquing scientists interest in the biology of the cell Today with the

technical advances we have made in the field of optics it is even possible to observe life on a nanoscale From Hooke's observations of cells and his inadvertent discovery of the cell wall we have since moved forward to engineering plants with modified cell walls Studies on the chloroplast have also gone from Julius von Sachs experiments with chloroplast to using chloroplast engineering to deliver higher crop yields Similarly advances in fluorescent microscopy have made it far easier to observe organelles like chloroplast once studied by Sachs or actin observed by Bohumil Nemec If physics in the form of cell biology has been responsible for one half of this historical development biochemistry has surely been the other Structure and Function of Chloroplasts - Volume II Hongbo Gao,Jürgen Soll,Rebecca L. Roston,Yan Lu,Luning Liu,2021-01-11 Dr Deqiang Duanmu based at Huazhong Agricultural University in China is collaborating with Dr Gao Dr Soll Dr Roston Dr Lu and Dr Liu as an editorial assistant in this Research Topic **Handbook of Maize** Jeff L. Bennetzen,Sarah C. Hake,2009-01-16 Maize is one of the world's highest value crops with a multibillion dollar annual contribution to agriculture The great adaptability and high yields available for maize as a food feed and forage crop have led to its current production on over 140 million hectares worldwide with acreage continuing to grow at the expense of other crops In terms of tons of cereal grain produced worldwide maize has been number one for many years Moreover maize is expanding its contribution to non food uses including as a major source of ethanol as a fuel additive or fuel alternative in the US In addition maize has been at the center of the transgenic plant controversy serving as the first food crop with released transgenic varieties By 2008 maize will have its genome sequence released providing the sequence of the first average size plant genome the four plant genomes that are now sequenced come from unusually tiny genomes and of the most complex genome sequenced from any organism Among plant science researchers maize has the second largest and most productive research community trailing only the Arabidopsis community in scale and significance At the applied research and commercial improvement levels maize has no peers in agriculture and consists of thousands of contributors worthwhile A comprehensive book on the biology of maize has not been published The Handbook of Maize the Genetics and Genomics center on the past present and future of maize as a model for plant science research and crop improvement The books include brief focused chapters from the foremost maize experts and feature a succinct collection of informative images representing the maize germplasm collection

Carotenoids: Carotenoid and Apocarotenoid Biosynthesis, Metabolic Engineering and Synthetic Biology,2022-07-23 Carotenoids Carotenoid and Apocarotenoid Biosynthesis Metabolic Engineering and Synthetic Biology Volume 671 the latest release in the Methods of Enzymology series highlights new advances in the field with chapters on Metabolomics based analysis of carotenoids and related metabolites in various species via quantitative trait loci and genome wide association mapping approaches Using bacteria for functional analysis of genes encoding carotenoid biosynthetic enzymes Rice Callus as a High Throughput Platform for Synthetic Biology and Metabolic Engineering of Carotenoids Transient expression in Nicotiana benthamiana A simple platform to investigate genes encoding carotenoid biosynthesis

enzymes from diverse algal lineages and much more Additional chapters in this new release cover Protein protein interaction techniques to investigate post translational regulation of carotenogenesis The isolation of sub chromoplast structures from tomato and capsicum fruit Carrot protoplasts as a suitable method for protein subcellular localization High throughput production and characterization of carotenoid enzymes for structural and functional studies Production and structural characterization of the cytochrome P450 enzymes in carotene ring hydroxylation and more Provides the authority and expertise of leading contributors from an international board of authors Presents the latest release in Methods in Enzymology series Updated release includes the latest information on Carotenoids Carotenoid and apocarotenoid biosynthesis metabolic engineering and synthetic biology Plastid Development in Leaves during Growth and Senescence Basanti Biswal,Karin Krupinska,Udaya C. Biswal,2013-07-08 Chloroplast development is a key feature of leaf developmental program Recent advances in plant biology reveal that chloroplasts also determine the development the structure and the physiology of the entire plant The books published thus far have emphasized the biogenesis of the organelle but not the events associated with the transformation of the mature chloroplast to the gerontoplast during senescence This book with 28 chapters is unique because it describes how the chloroplast matures and how it is subsequently transformed to become the gerontoplast during senescence a process required for nutrient recycling in plants This book includes a state of the art survey of the current knowledge on the regulation and the mechanisms of chloroplast development Some of the chapters critically discuss the signaling process the expression potential of plastid DNA the interaction of cellular organelles and the molecular mechanisms associated with the assembly and the disassembly of organellar complexes and finally the modulation of chloroplast development by environmental signals **Harmonisation of Regulatory Oversight in Biotechnology Safety Assessment of Transgenic Organisms, Volume 3 OECD Consensus Documents** OECD,2010-11-09 These OECD Biosafety Consensus Documents identify elements of scientific information used in the environmental safety and risk assessment of transgenic organisms which are common to OECD member countries and some non members associated with the work *Organelle Genetics* Charles E. Bullerwell,2011-10-26 Mitochondria and chloroplasts are eukaryotic organelles that evolved from bacterial ancestors and harbor their own genomes The gene products of these genomes work in concert with those of the nuclear genome to ensure proper organelle metabolism and biogenesis This book explores the forces that have shaped the evolution of organelle genomes and the expression of the genes encoded by them Some striking examples of trends in organelle evolution explored here are the reduction in genome size and gene coding content observed in most lineages the complete loss of organelle DNA in certain lineages and the unusual modes of gene expression that have emerged such as the extensive and essential mRNA editing that occurs in plant mitochondria and chloroplasts This book places particular emphasis on the current techniques used to study the evolution of organelle genomes and gene expression

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